myopia which has shown a tendency to progress, for by increasing the tension of the interni by bringing forward the muscle, we may again light up a trouble which had begun to disappear with the occurrence of the deviation.

Among the inconveniences of the operation may be also mentioned the displacement of accommodation, and, in this connection, I may remark that I have seen a case where this took place to such a degree that artificial myopia, or spasm of the ciliary muscles, was produced, the eye, previous to the operation, being immetropic, and after it, myopic $\frac{1}{24}$. This myopia yielded to atropia, but gradually returned when the drug was discontinued, and has been present, with slight variations, ever since.

With all its disadvantages, however, I cannot help thinking that "advancement," when properly performed, is one of the most brilliant operations in ophthalmic surgery.

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### ART. III. — *Account of a Severe Ophthalmia caused by Exposure to the Intense Light Reflected from a Dazzling Surface of Snow.* By W. H. GARDNER, M. D., Assistant Surgeon U. S. A.

WE had the opportunity, when on duty in the prairie regions of the northwest portion of our country, to witness a very severe, and often destructive, ophthalmia, caused by exposure to the intense light reflected from a surface of snow, some account of which may interest the readers of this Journal. This disease is most frequent among Indians and half-breeds of this region, who suffer severely with it every year, and many of them are blind from this cause. In the earlier part of spring, when the snow is beginning to melt, the disease is most common, for then the water formed by the melting snow fills up all the little irregularities of the snowy surface and makes a more perfect mirror.

The grade of the disease accords with the amount of exposure and the length of time the irritation is kept up, and may occur as an ephemeral conjunctivitis, which will subside in a few hours with a removal of the cause, or as a violent panophthalmitis, which destroys the eye at once or leaves a condition which secondarily does so.

Under all conditions, except when the sun is very near the horizon, the eye is protected from its *direct* rays by the supra-orbital arch and eyebrow, but the snow on the ground acting as a mirror throws the *reflected* rays directly into the eye, and the cause acts with more constancy and severity to a pedestrian than to a person riding on horseback or in a covered sleigh, for the body of the sleigh intercepts the reflected light to a great extent, and the head and neck of the horse do so to some degree, but usually the severity of the cold or the condition of the roads makes walking the only means of travel where this disease most frequently prevails.

Winter expeditions in northern countries will always have this disease to contend against, and if the direction of the march be southward, the course is more aggravated on account of the position of the sun. In the spring of 1866 a troop of Minnesota volunteer cavalry arrived at Fort Snelling to be mustered out of the United States service. They had marched down from Fort Abercombie, Dacotah Territory, during the latter part of February, travelling nearly southeast. When they arrived at their destination there were not ten men in the troop—which was full—who were not more or less snow blind. In the most of the cases it took the form of a mild conjunctivitis, but in several there was ulceration of the cornea and in others panophthalmitis, which has doubtless left permanently impaired eyesight in more than one.

The usual course of the disease and its terminations can be told in a few words. The excessive amount of light first causes an irritation of the retina, which by reflex action produces congestion of the vessels of the conjunctiva and inflammation of this membrane, which becomes chemosed, and thus preventing the nutrition of the cornea, causes ulceration of this part. This ulceration may heal in time, leaving a permanent opaque spot to mark its site; or the ulceration extending, may cause perforation of the cornea and escape of the humours and prolapse of the iris; or the extent of the ulcer may be so great in the first place as to leave permanent opacity of the cornea ; or if the irritation of the retina be of long continuance —as it sometimes is among Indians and travellers crossing the plains in winter—all the tissues of the eye may be involved at once, causing loss of sight. On the other hand, if the exposure has been slight, the disease may only amount to a simple conjunctivitis or a slight retinitis, which is cured in a few days by proper treatment and rest of the organ, leaving no other ill effects than a retina over-sensitive to light, and perhaps a few dark spots before the eyes. It may also leave night-blindness as a sequel, though this result must be rare, as I have met with but one instance among the very many cases I have seen.

However mild or severe a form this disease may assume, it is always exceedingly painful, and is always liable to cause destruction of the eye; not only this, but the *lives* of travellers on the plains in the winter-time depend on the organ of vision being intact. The history of each of the military posts of the Northwest will show some lives lost every winter or spring by men becoming snow-blind, losing their way, and perishing in the snow.

The following cases, selected from my note-book, and here given in brief, may not be uninteresting as showing the various forms this disease may assume, and its termination under treatment:—

CASE I.—Dennis T., æt. 40, was admitted to hospital in February, 1866, having marched over two hundred miles, when the ground was covered with snow. There was profuse lachrymation and great photophobia; great injection of the conjunctiva, which was chemosed around the cornea; there was throbbing of the temples, headache and constipation of bowels, furred tongue, &c.

*Treatment.*—Was cupped over the temples to ℥ij; pil. cath. comp. iv at once; cold dressing to eyes; to be kept in dark room, and to have low diet, with broths and soft toast. In a few days the photophobia subsided, but each cornea was found ulcerated, for which various local stimulants and washes and general tonics were used until the middle of April, when, at his own request, he was discharged, not cured.

CASE VI.—Capt. M., æt. 31, a vigorous, healthy man, rode from Fort Wadsworth, Dacotah Territory, to Fort Abercrombie, D. T., eighty miles, on horseback, in March, 1867, the ground being covered with snow; was led into hospital blind; with intense headache; throbbing of eyeballs; profuse lachrymation; injection of conjunctiva; photophobia, with spasm of orbicularis, etc.

*Treatment.*—Cupping over the temples; magnesia sulph. ℥j; bromid. potass. ʒss; ice-water applications to the eyes; to be kept in a dark room and placed on low diet; recovery perfect in five days.

CASE VIII.—A Chippewa half-breed walked to Fort Abercrombie, Dacotah Territory, from Leaf Mountain, Minnesota, distance sixty miles, in April, 1867; ground covered with snow; patient states "that whilst walking directly towards the sun a mist had suddenly come over both his eyes, with a feeling of weight and throbbing in the eyeballs. After sitting down beside the trail and waiting a few minutes, he found the mist continued over the right eye, and over the left there were scattered large black spots, though he could see some out of a portion of the eye, and by this uncertain sight he was able to see the dark line of timber which marked the position of the Red River and the Fort."

*Treatment.*—Low diet; rest; protection of the eyes from light and motion by packing the orbits; occasional cathartics and potass. iodid. ℈j each day; recovery in four weeks, with a few dark spots, but not of sufficient extent to interfere materially with vision.

CASE IX.—Corporal V., in April, was exposed, whilst on escort duty, to the intense light reflected from the snow. He came into hospital with conjunctivitis; in both eyes this membrane was chemosed around the cornea, and in some places patches of extravasated blood were visible; there was great intolerance of light, throbbing of eyeballs, etc.

*Treatment.*—Was cupped over each temple; ordered pil. cath. comp. iv; low diet and rest; potass. bromid. ʒss each night; orbit packed to prevent light and motion. In a few days the more severe symptoms subsided, leaving a small, deep, excavated ulcer upon each cornea. Under the use of local stimulants, general tonics, and liberal diet, these soon healed, leaving a thickening of the conjunctiva at the internal side of the right eye, where the ulcer was nearest the inner canthus.

In this disease, as in most others, "an ounce of prevention is worth many pounds of cure," and with this view many travellers over snowy regions blacken the parts about the orbit with gunpowder dissolved in water. The Esquimaux use an opaque shield of wood or skin, which has a horizontal slit over the pupil to admit the light. The Chippewa and Dakota Indians, when having to travel when there is snow on the ground, use an apparatus formed of two tubes of stiff buffalo hide about two inches long and three-quarters of an inch in diameter, sewed firmly to a head-band of tanned hide, with openings for the tubes. Each of these plans are the same, in that they attempt to prevent too great a quantity of light from entering the eye by supplementing a diaphragm external to the iris. The iris, of course, under intense light, contracts to as small an opening as is compatible with vision; but even the *smallest* opening so near the retina as is the iris, yet allows of so great illumination as to become a cause of disease, when the snow and ice surface everywhere reflects the intense light directly into the eye. Following out the idea indicated by the rude inventions of the Esquimaux and Indians, I devised goggles of hard rubber, shaped to fit over the orbit, and having over the pupil in the axis of vision a stenopaic opening; or a small oval opening with the transverse axis of the oval horizontal. This supplementary iris or diaphragm I found, on many occasions requiring its use, would prevent snow-blindness entirely, whilst it does not at all interfere with vision except to limit the field of view to the locality directly in front of the eye. Glasses coloured green, blue, or smoke-gray will of course limit the amount of light to a great extent, but they hardly fit closely enough to the orbit to give entire protection, besides which the discoloration given to all objects seen through these coloured media is so annoying and irritating, especially to one unaccustomed to their use, that they frequently cause headache and nausea.

## ART. IV.—*Observations on Ulceration of the Jugular Veins, communicating with an Abscess or an Open Sore.* By S. W. GROSS, M. D., Lecturer on Diseases of the Genito-Urinary Organs in the Jefferson Medical College, and Surgeon to the Philadelphia Orthopædic Hospital.

ULCERATION of the bloodvessels, as an effect of the extension to their coats of unhealthy inflammation from the surrounding tissues, is of comparatively rare occurrence, and of still greater infrequency is perforation of these vessels from inflammation commencing in their proper tunics. Since the publication of Mr. Liston's celebrated case of communication of the common carotid artery with the cavity of a chronic abscess,[1] a number of somewhat analogous instances of ulceration of arteries and veins in different portions of the body have been recorded, which clearly establish the fact that

[1] On a Variety of False Aneurism, Brit. and For. Med. Rev., vol. xv p. 155, 1843.